

# DSP Final Project Proposal

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I plan to implement a channel vocoder (different from a phase vocoder). This is the kind of algorithm that makes “talkbox” instruments work, where someone sings into a microphone and plays notes on a keyboard and the resulting sound is a synthesizer that sounds like a pitched voice. This is done using a two banks of identical band pass filters (around 5 – 10) – one is applied to the vocal and one to the keyboard. The outputs from each filter of the vocal sound are sent to envelope followers which then determine the volume of the bands in the musical sound. This makes the musical sound like a voice. A class I took in the music department briefly talked about the high-level concepts, so I will utilize those slides (Figure 1 is a helpful diagram from the class). I also found a free vocoder which has a diagram of how it works <https://tal-software.com/downloads/docs/TAL-Vocoder-UserManual.pdf>. Since I am working individually, there is no division of labor necessary.

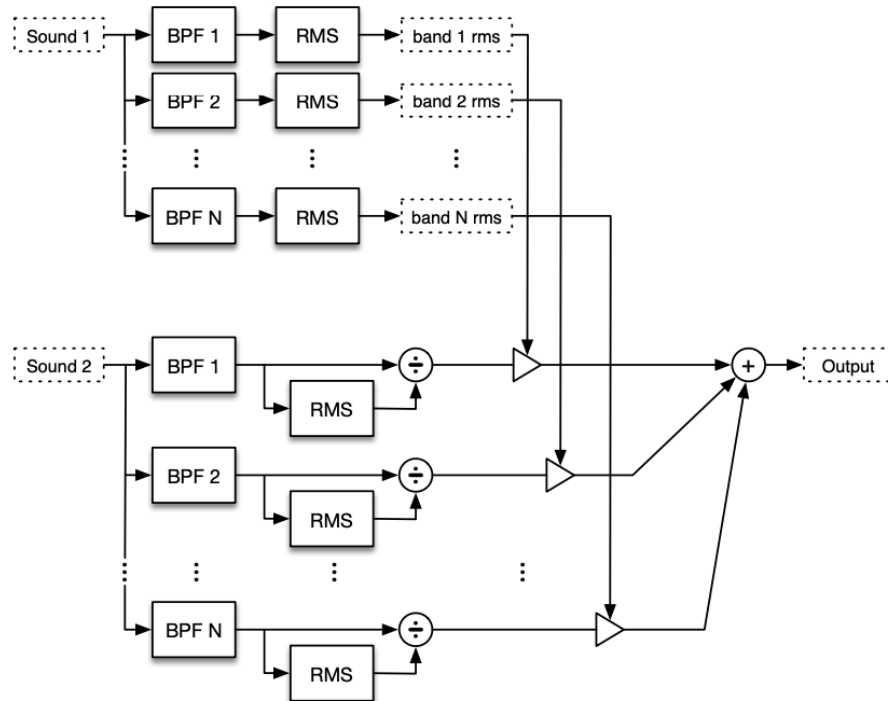


Figure 1: Vocoder Signal Diagram Example (Credit: Luke S. Dahl)